

April 4, 2022

RECEIVED
PLANNING DEPARTMENT

APR 5 2022

TOWN OF YORKTOWN

Mr. John Tegeder
Director of Planning
Town of Yorktown
Albert A. Capellini Community and Cultural Center
1974 Commerce Street
Yorktown Heights, New York 10598

Re: Yorktown A Solar Project
3849 Foothill Street
Yorktown, New York
Subj: Expansion on B&L Comment Letters dated 01 November 2021 and 06 December 2021
File: 2478.001.001 Phase 03

Dear Mr. Tegeder and Members of the Planning Board:

In response to a request from the Town, Barton & Loguidice, D.P.C. (B&L) is expanding on its two (2) initial comment letters with respect to this application, to address specific concerns expressed at the public hearing on this application on February 2, 2022 and subsequent public comment letters.

B&L offers the following expansion of our initial reviews based on the concerns and responses heard to date and provided to B&L from the Town.

1. Section 270-3 of the Town's tree ordinance 'Preservation of Yorktown's Trees and Woodlands' mentions many benefits of individual trees and woodlands. Concerns given to the Town relate to the loss of these benefits and functions when they are removed for the solar farm. Outlined are some expansions to general comments and items in the Town's ordinances with respect to the proposed use of this property in this Application.
 - a) Woodlands filter and recharge the drinking water aquifer.
Response: According to Mapping Westchester County GIS, the site in question does not contribute to the filtering or recharge of the drinking water aquifer. See attached.
 - b) Healthy trees provide oxygen and slow climate change by acting as a sink for carbon dioxide and mitigate other air pollution problems.
Response: As noted in the Con Edison Tree Ordinance Mitigation Plan from October 23, 2021 attached, on page 2 it states "The EPA Greenhouse Gas Equivalencies Calculator attached demonstrates that the greenhouse gas offsets from this 1.87 MW AC solar project will be 60 million pounds of carbon dioxide (CO2) over the 25-year life of the project. That is the equivalent of taking nearly 6 million passenger car miles driven ... and their fossil fuel emissions ... off the road. By comparison the trees currently on the site which are to be cut would sequester less than 5% of that amount of carbon dioxide during the same period."



- c) Trees help to stabilize soil, reducing the risk of soil erosion and siltation in watercourses and clogging of drainage channels.

Response: As can be seen in the most recent site plans, Level spreaders/Energy Dissipaters have been provided for every row of panels to offset any additional erosion that would occur due to altering the land cover from woodlands to grasslands.

- d) Woodlands help to moderate temperature.

Response: In a study conducted by Greg Barron-Gafford at the University of Arizona, it was found that temperatures at PV plants tend to be 3-4 degrees Celsius (5-7 degrees Fahrenheit) warmer than wildlands at night and can create a PVHI (Photovoltaic Heat Island) effect (Barron-Gafford, G., Minor, R., Allen, N. et al.). It was found that the spatial extent of the PVHI effect is constrained within thirty meters (98 feet) of the edge of the array, after which point effects are not detectable.

This study was performed on PV sites that were mechanically bladed to remove all vegetation, and the PVHI effect is largely driven by the absence of vegetation. Greg Barron-Gafford noted in his expert witness statement that co-locating grasses under PV arrays (something of which the Applicant is proposing) can “yield multiple ecosystem services (tangible and non-tangible amenities) including continued carbon dioxide sequestration from our atmosphere, localized cooling from the transpiration of the plants, grazing forage, and storm-water regulation. In my (Barron-Gafford’s) team’s own preliminary work on the effects of revegetating PV solar farms with grasses, we found significant cooling of the local atmosphere.” Therefore, with the proposed co-location of grasses beneath the panels, B&L believes that PVHI effects should be less than the 5-7 degrees that were found in the study conducted on barren lands.

This study was also conducted in Tuscon, Arizona where temperatures typically vary between 42 degrees and 102 degrees Fahrenheit (Weather Spark). It was found that in the cooler months, the PVHI effect was less severe. The temperatures in Yorktown, New York typically vary between 20 and 83 degrees Fahrenheit (Weather Spark). In Greg Barron-Gafford’s expert witness statement in which he compared his study in Tuscon, AZ with Shepparton, AU (an area of Australia that is both cooler and has more vegetative cover than Tuscon, AZ, similar to Yorktown, NY versus Tuscon, AZ) he predicted that “the degree of PVHI within Shepparton might be lower than the values we measured in Tuscon because of the differences in background temperatures and vegetation.” B&L believes that this conclusion can be similarly applied to Yorktown, New York as the basis of the parameters of that conclusion is a similar comparison of AZ versus NY.

While we could not find any studies specifically comparing a forested area to a solar farm with co-located grasses and a forested vegetative buffer, based on these studies we can conclude that there will likely be warming within the solar farm but it should be less than a 5-7 degree Fahrenheit difference, and it will be negligible past 100 feet of the panels or less.

- e) Woodlands provide habitat for wildlife.



Response: The solar panels themselves are 3' off the ground at their lowest and 12' off the ground at their highest point, providing ample space for animals to pass under and around the proposed panels.

The site is proposed to be planted with tall grasses which will allow for groundcover and habitat for much of the wildlife found in this area.

Fencing: Currently the Applicant is proposing fencing around the development with a 6" clearance gap at the bottom to allow for animal passage.

B&L is recommending the following fencing specifications to provide a safe passage to a wider range of animals found in the area. The fencing should be wildlife-friendly with smooth wires to prevent injury. The fencing should have a maximum height of forty-two inches to allow for deer to leap over it and provide at least sixteen inches of clearance between the ground and the lowest beam or wire to allow wildlife to crawl under it. If it is not desired for deer to enter the property, height can be increased from forty-two inches to six feet. The fence should have wide spacing between wires or beams to prevent tangling and incorporate visibility markers to alert wildlife to the presence of an access point to traverse the fence.

- f) Specimen trees make disproportional contributions to ecological benefits of woodlands, as well as beautify our residential and commercial neighborhoods, provide a visible link to our history and are a critical reservoir of seeds for woodland regeneration, mitigating the impacts of overbrowsing by deer.

Response: Specimen trees are defined as any tree with a dbh of 24 inches or more. Based on an analysis of the tree inventory data, only 4.5% of trees to be removed can be defined as specimen trees. Therefore, the majority of the trees to be removed (95.5%) are not classified as specimen trees as per the Town's tree ordinance. The woodlands around the proposed solar farm will remain on three sides of the development allowing the existing aesthetic and ecological benefits of this woodland to function comparatively to its current function.

- g) Woodlands function as vital ecological communities not just because of the presence of trees, but because of the presence of canopy, shrub and ground cover layers of vegetation.
- Response: As can be seen in the photos below from a site visit on 10/19/2021, the site has no significant layer of woodland plants, understory, or ground cover layers in the fall season. This represents the condition found in many Westchester County woodlands, where there is close to zero tree regeneration, and no native understory. In some cases, the understory has been replaced by invasive species, disrupting the entire ecology of the woodland.***

B&L is recommending that within the Application, the Applicant designate a portion of the woodland to remain to be planted with native understory species. With deer being the largest contributor to this change in the understory, and with their numbers not forecasted to decrease in the near future, a deer enclosure should be included with ample S-gates, allowing people and small animals to traverse, but not deer. Within this space, any invasive species that exist should be removed and replanted with appropriate native

understory. This work can be conducted using a portion of the tree fund money provided in response to the proposed development.





2. Concerns were raised that the documents submitted do not successfully mitigate for the loss of trees and forest function. The applicant claims that contributing a significant sum of money to the tree fund is sufficient.

Response: In the paper cited earlier in this letter by Barron-Gafford, G., Minor, R., Allen, N. et al., ecosystem degradation associated with the development of a utility scale PV site can be mitigated through targeted revegetation and could increase “the collective ecosystem services associated with an area.”

B&L recommends that this tree fund money go towards the recommended revitalization and replanting of native understory as outlined in response 1g above and/or the reforestation of the area as part of the decommissioning plan as outlined in response 6 below.

3. Concerns were noted that the applicant states how a housing development would disturb the site, stating that sound housing development would not eliminate the benefits of the forest but the clear cutting for a solar field will. It was further debated that suburban development provides a variety of landscapes while solar fields are limited.

Residential subdivision (cluster or conventional) vs. solar farm development. This discussion has been brought up multiple times with respect to this application.

Response: Please reference the table below provided by Con Edison comparing the ‘variety of landscapes’ provided by the proposed housing developments versus the solar farm.



This outlines the comparable reduction of treed areas for each development researched, while highlighting a clear difference in impervious materials which impacts many environmental features including vegetative cover and erosion, with the proposed solar farm having the least impact with respect to this feature.

Feature	Existing Site (Vacant)	Yorktown A Solar Farm	Cluster Subdivision	Conventional Subdivision
Treed Area	34.23 Acres	18.33 +/- Acres	19.97 +/- Acres	18.12 +/- Acres
Grass/ Meadow	0.00 Acres	15.66± Acres	11.47 +/- Acres	13.50 +/- Acres
Impervious Materials Added	0.00 Acres	0.07± Acres	Roads/Driveways 1.63 +/- Acres Houses 1.16 +/- Acre Total 2.79+/- acres	Roads/Driveways 1.76 acres +/- Houses 0.85 +/-acres Total: 2.61± Acres
Pervious Gravel Added	0.00 Acres	0.17± Acres	0.00 Acres	0.00 Acres

- Clarification of the use and evaluation of the project site with respect to the term core forest is required as there were statements made contesting the findings that no core forest is present at this site. Concerns were made with preserving all forests stating that woodlands of moderate-size and -age trees continue to provide valuable habitat and function.

Response: The definition of a core forest does not imply a large parcel. A core forest does not account for imaginary parcel boundaries. The definition of a core forest from the Hudson Valley Natural Resource Mapper is as follows:

“Core forests are interior forest areas surrounded by at least a 100-meter wide buffer of edge forest habitat. Core forest is especially important for sensitive wildlife including many forest songbirds, which avoid nesting near areas with human disturbance. Although the value of individual forest patches for wildlife depends on landscape context and other factors, core forests that are at least 500 acres in size are more likely to provide enough suitable habitat to support a diversity of interior forest species.

The fragmentation of large forests by new roads and development into smaller forest patches reduces or eliminates core forest and is a leading driver of biodiversity loss. Fragmentation decreases forest habitat quality, disrupts wildlife movement, and facilitates the spread of invasive species. This layer represents the results of a landscape fragmentation analysis applied to forest patches in the 2016 Hudson Valley Forest Condition Index. Avoiding further fragmentation of core forests will help conserve the integrity and habitat value of ecologically significant forest patches.”

The objective of this project was to delineate road-less forest patches throughout New York State, based on the latest version of the National Land Cover Dataset (2016), and then to assess the condition of those patches within the Hudson River Estuary Watershed. While approximately 65% of the Hudson River estuary watershed is forested, the condition of that forest land is variable, with only about half meeting the criteria of higher-quality, intact core forest.



Using this map allows us to ensure avoidance of fragmentation and degradation of high-quality forests and core forest areas. As shown in the map attached from the Hudson Valley Natural Resource Mapper, there are core forests present in the general area of this project matching the criteria of existing offsets from roadways and development. While the proposed solar site location site is not indicated as a core forest, we can assume that the woodlands in question match the characteristics of the adjacent woodlands based on our field observations and understanding of Westchester County's woodlands. The proposed application does not fragment this forested area and maintains a continuous swath of forest as currently exists preserving this forest corridor to maintain habitat connectivity by concentrating the proposed solar farm development on the forest edge as recommended in forest conservation measures.

It is key to note the Hudson Valley Forest Condition Index prioritizes forest patches based on metrics relating to size, fragmentation, connectivity, stressors, habitat value, and carbon sequestration. This allows one to better understand individual forest values within a regional context and to prioritize forest areas for conservation and land-use planning efforts.

The woodlands in question, and the woodlands to the south of Shrub Oak Brook and to the east of the Mohegan outlet, are listed in the lowest category of value, with a 0-20 percent Forest Condition Index, supporting our field observations of this patch of forest lacking the key important understory layer reducing the overall value of the woodlands themselves.

While it is agreed that forests and tree cover are important to a successful ecosystem, it is important to understand a particular woodland's value. In this case, with no native understory present due to deer browsing and the establishment of invasives, the habitat quality is lower and less carbon is stored in the soil long term.

Solar farms are valuable in the goal of reaching 80% renewable energy in the USA to assist in cutting carbon emissions and slowing climate change. And with the degradation of the forest understory in this area, the mitigation measures proposed for and recommended for this application can aid in bringing back key local species and potentially improving lands that have been impacted by deer and invasives. This leads this proposed solar farm with the potential net benefit of restoring a native habitat and improving ecosystem services.

The pollinator-friendly proposed native meadow seed mix can help boost energy yields, maintain erosion control and groundwater stores. It is recommended that the applicant take reasonable efforts to keep and to score high on the New York Pollinator-Friendly Solar Scorecard for vegetation standards for solar arrays, encouraging the planting and maintenance of low-growing and flowering meadows of deep-rooted native plants to benefit honey bees, native pollinators, birds, and enrich soils.

5. Environmentalists have determined that cool ravines can support unique species and larger buffers are needed to protect them. What will the impact of the runoff from a grassland habitat have on the stream? Will a 100 ft. buffer adequately shield this riparian corridor from heat island effects of a solar installation?

Response: From B&L's findings, "It has been demonstrated that riparian buffers narrower than 10m on each side of the stream are insufficient to sustain the desired ecosystem functions (Davies & Nelson, 1994; Kiffney et al., 2003; Sweeney & Newbold, 2014) and much wider



buffers (>30 m) are necessary to preserve biodiversity (Marczak et al., 2010; Oldén et al., 2019; Selonen & Kotiaho, 2013)” (Kuglerova L. et al.). 30m equates to 98.43 feet.

The applicant meets this criteria, providing a 100 foot buffer to adequately distance the riparian corridor from the PV system.

Regarding the grassland habitat, grassland systems provide carbon storage, improved water infiltration, root mass and organic matter in the soil, and have deep root beds aiding in a decrease in soil erosion and helps to hold the soil together when the wind blows strongly or when rains flood the ground. The proposed dense cover of grasslands will aid in soil stabilization as well as provide a habitat for smaller wildlife.

6. The B&L report assumes no other portion of the property will be developed. The Board is concerned about the adverse effects on the Mohegan Outlet if the 16 remaining acres to the SW of the outlet are developed without a conservation easement. The B&L conclusions do not address this possibility.

Response: The applicant has agreed to impose a conservation restriction on the remaining portion of the property to prevent anything else from being developed over the lifespan of the project.

While B&L has not received the updated decommissioning plan, the applicant stated in a response to comments letter that they would update the plan to not fill in the stormwater detention ponds and swale, and would remove the checkdams, as they have chosen to keep the grasses instead of reforesting the area. B&L recommends that the applicant consider revising the decommissioning plan to include the reforestation of the solar farm area instead of keeping the grasses, in order to re-establish the existing conditions and functions. Monies collected for the Tree Fund from the project could be used to re-forest the area after decommissioning.

It is important to note that solar panels create limited damage to soils and can be fairly easily removed compared to lands developed with housing or paving making them easily returned to regular forestry use if the solar farm is decommissioned in the future.

7. A Pos Dec (EIS must be prepared and made available for public review) is requested to be issued to address the perceived potential significant adverse impacts on site due to the proposed development as part of the SEQRA process to address losing sixteen (16) acres of forest and due to the presence of both wetlands and floodplain.

Response:

As we have not received parts 2 and 3 of the Town’s SEQR Environmental Assessment Form (EAF), we cannot conclude whether or not the removal of sixteen (16) acres of forest and presence of wetlands and floodplain are considered as significant adverse impacts. The Town should consider these topics during their close-out of the SEQRA process and progression of the Parts 2 and 3 materials.

B&L hopes that this addresses all concerns in regards to this project.

If you have any questions, please do not hesitate to contact me.



Mr. John Tegeder, Director of Planning
Town of Yorktown
April 4, 2022
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Sincerely,

BARTON & LOGUIDICE, D.P.C.

A handwritten signature in blue ink, appearing to read 'Leigh G. Jones'.

Leigh G. Jones, PLA
Project Manager

NN/LGJ

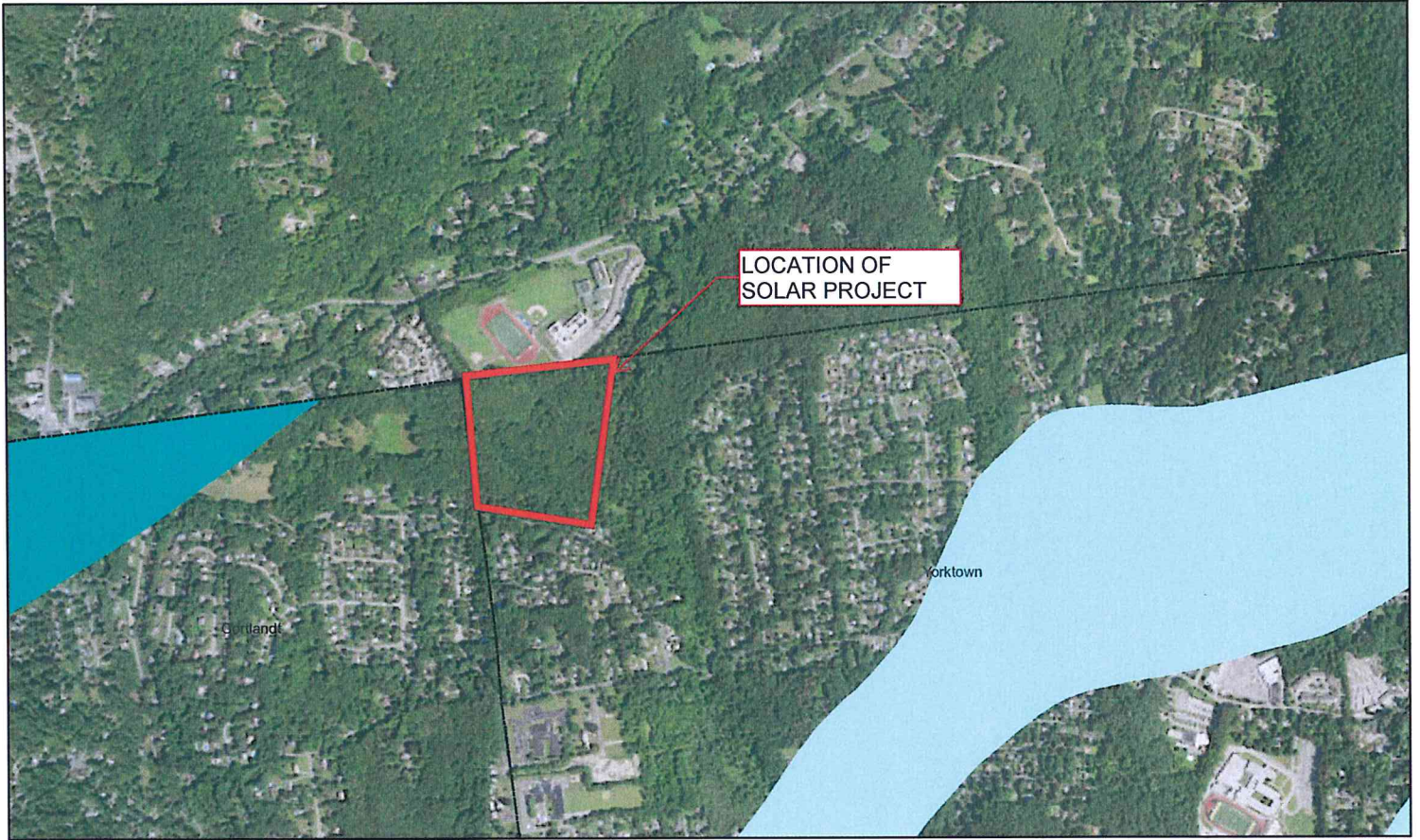
Sources

Barron-Gafford, G., Minor, R., Allen, N. *et al.* The Photovoltaic Heat Island Effect: Larger solar power plants increase local temperatures. *Sci Rep* 6, 35070 (2016). <https://doi.org/10.1038/srep35070>

Barron-Gafford, G. Statement of Evidence by Greg Barron-Gafford on Solar Heat Islanding Issues. Prepared for Neoen Australia Pty Ltd. (May 2018). https://www.planning.vic.gov.au/_data/assets/pdf_file/0024/126555/301-Expert-Witness-Statement-of-G-Barron-Gafford-PVHI-May-2018-Lemnos.pdf

Lenka Kuglerová, Jussi Jyväsjärvi *et al.* Cutting Edge: A Comparison of Contemporary Practices of Riparian Buffer Retention Around Small Streams in Canada, Finland, and Sweden. (September 10, 2020) [Cutting Edge: A Comparison of Contemporary Practices of Riparian Buffer Retention Around Small Streams in Canada, Finland, and Sweden - Kuglerová - 2020 - Water Resources Research - Wiley Online Library](#)

Mapping Westchester County



2/21/2022, 10:15:47 AM

- Municipal Boundaries
- Probably <10 gal/min
- Aquifers**
- 10-100 gal/min
- >100 gal/min
- Unknown

1:18,056



GIS
<http://giswww.westchestergov.com>
Michaelian Office Building
148 Martine Avenue Rm 214
White Plains, New York 10601

February 20, 2022 | 4:46 pm
COVID-19 Vaccines

Children ages 5+ are eligible for the COVID-19 vaccine and children ages 12+ are eligible for a booster. Parents and guardians: make sure your child gets vaccinated and stays up to date with all recommended doses.

VAX FOR KIDS >

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Hudson Valley Natural Resource Mapper

A Tool for Communities in the Hudson River Estuary Watershed



Base Map: **NYS Aerial**

How to use this map

Search

Tools

Hudson River Estuary Layers

Stream and Watershed Layers

Wetland Layers

Forest Layers

All Layers

Layers become visible at different scales

Forest Condition Index (Percentile) [?](#)

- 99-100 - Top 1%
- 95-99 - Top 5%
- 90-95 - Top 10%
- 80-90 - Top 20%
- 60-80
- 40-60
- 20-40
- 0-20

Core Forests [?](#)

Biodiversity Layers

Scenic and Recreation Layers

Reference Layers





October 23, 2021

BY EMAIL

Richard Fon, Chairman
Planning Board
Town of Yorktown
363 Underhill Avenue
Yorktown, NY 10598

Subject: Tree Ordinance Mitigation Plan - Proposed Solar Project, Foothill Street, Yorktown

Dear Mr. Fon:

Con Edison Clean Energy Businesses, Inc. is proposing to develop a ground-mounted solar facility on 15.90 acres of the 34.23-acre site at 3849 Foothill Street in Yorktown owned by William Lockwood.

In accordance with the local Tree Ordinance, the Applicant has recently submitted a Tree Inventory to the Planning Board showing that a total of 1871 "protected" trees, of varying quality and condition, will be removed to develop the proposed project.

The Tree Ordinance also requires that the Applicant submit a "mitigation plan" to the Planning Board to "address and compensate for the impact of the removal of protected trees and removal or disturbance of protected woodlands."

The Applicant previously submitted a draft mitigation plan for discussion purposes, but, with the completion of the Tree Inventory, is now able to propose a final mitigation plan for consideration.

The Tree Ordinance provides for "Payment into the Tree Bank Fund. In lieu of replacing a lost protected tree or disturbance to a protected woodland, the payment shall be \$100 for every protected tree removed and \$300 for every 5,000 square feet of protected woodland disturbed." In gross terms, this formula would result in a payment to the Tree Bank Fund of \$228,656, based upon the 1871 trees @ \$100 (\$187,100) to be removed and the 15.90 acres of the 34.23-acre site to be disturbed (\$41,556).

As a part of its mitigation plan, the Applicant has submitted plans for an additional 212 plantings, installed at a cost of \$160,000, at the project site to enhance the natural screening and in mitigation for the trees to be removed for the project. See the Landscaping & Plantings in Mitigation Plan attached (and included in the Site Plan set as Sheet C006 at a larger scale). See also the Landscaping and Plantings for Mitigation Inventory and Cost Estimate attached.



The Applicant will also post a Bond to ensure the sustainability of those plantings and to pay for their replacement if necessary.

It is suggested that this \$160,000 expenditure for new plantings be credited toward the \$228,656 payment to the Tree Bank Fund and, as a result, the net payment to the Fund by the Applicant will be \$68,656.

In further mitigation, the Applicant notes that, over and above the 18.32 acres at the site left wholly undisturbed and untouched by the solar project development, once the project is completed, almost all of the 15.90 acres that is disturbed will be returned to grass and meadow, using a pollinator-friendly seed mix, as prescribed by a Certified Ecological Restoration Practitioner, providing a new, much-needed habitat for bees, butterflies and other native pollinators.

The solar project will also have a positive, indirect effect on the environment as solar energy replaces or reduces the use of other energy sources that have larger effects on the environment. The EPA Greenhouse Gas Equivalencies Calculator attached demonstrates that the greenhouse gas offsets from this 1.87 MW AC solar project will be 60 million pounds of carbon dioxide (CO₂) over the 25-year life of the project. That is the equivalent of taking nearly 6 million passenger car miles driven ... and their fossil fuel emissions ... off the road. By comparison the trees currently on the site which are to be cut would sequester less than 5% of that amount of carbon dioxide during the same period.

This mitigation plan will be in addition to a Payment in Lieu of Taxes Agreement (PILOT) that the Applicant proposes to enter upon with the Town. Please refer to the attached PILOT Toolkit, which is information and guidance provided by the New York State Energy Research and Development Authority (NYSERDA). As you can see, the proposed range for PILOT payments in the ConEd Territory is from a base of \$3,700 to a high of \$11,100 per MW AC of capacity. The reason for the range is that each Solar Project has individual characteristics which greatly affect its profitability. In this case, the Applicant is proposing to make payment to the Town at the top end of the NYSERDA Guidance, that is \$11,100 per MW AC. Though some of the project specific characteristics are higher than the NYSERDA Base Case which was used to come up with the PILOT guidance, such as higher lease payments and utility interconnection costs, in the spirit of collaboration the Applicant does not propose any discounts to the PILOT rate. These payments will be made in addition to the standard property tax currently paid to the Town.

As currently designed, this proposed project has a capacity of approximately 1.87 MW AC. Based on the \$11,100 per MW AC payment, this equals an additional tax payment to the Town of approximately \$20,757 per year, or a total of approximately \$311,355 over the term of the PILOT Agreement. This provides great tax benefit to the Town without placing any burden on Town resources or services. More specifically, such projects do not use sewer or water, do not require trash pick-up or police or fire response and, most importantly, do not put any additional



children in the school system. As a result, all of this additional revenue can be used for enhancing Town programs and/or or infrastructure ... or to lower the tax burden for residents.

Your consideration of this mitigation plan is appreciated. Con Edison Clean Energy Businesses, Inc. looks forward to becoming a good corporate neighbor in the Town and to assisting in further enhancing the community in which you and the Planning Board justifiably take such pride. It is also excited to bring this clean, renewable electricity project to the Town.

Regards,

Joe Shanahan

Project Developer

Con Edison Clean Energy Businesses

100 Summit Lake Drive

Valhalla, NY 10595

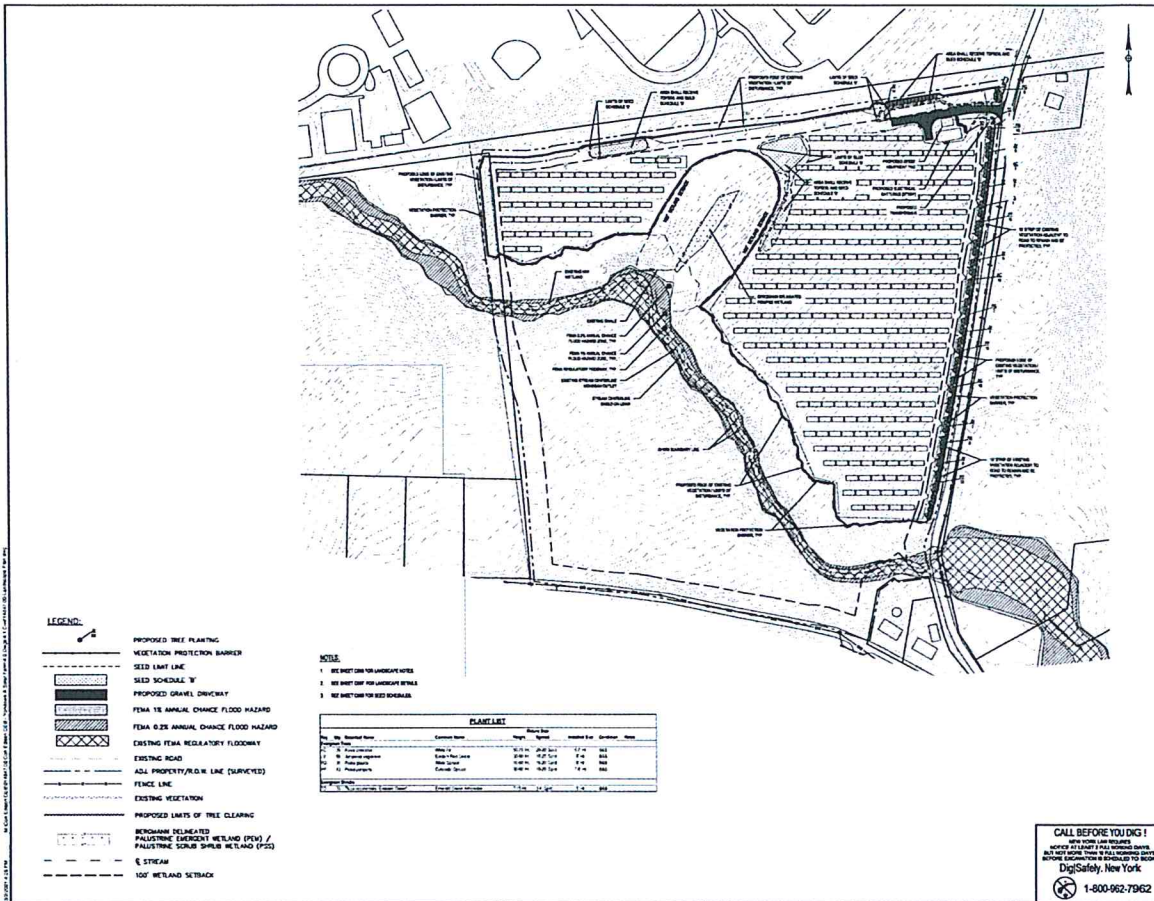
M: (978) 888-4088

E: ShanahanJ@conedceb.com

W: ConEdCEB.com

CC: Town Supervisor Matthew Slater (By Email)

Tree Conservation Advisory Commission Attn: Bill Kellner (By USPS)



YORKTOWN A SOLAR FARM
FOOTHILL STREET
 TOWN OF YORKTOWN
 WESTCHESTER COUNTY
 NEW YORK

CON EDISON CLEAN ENERGY BUSINESSES, INC.

100 SUMMIT LAKE DRIVE
 VALHALLA, NY 10595

B BERGMANN
 ARCHITECTS ENGINEERS PLANNERS

100 SUMMIT LAKE DRIVE
 VALHALLA, NY 10595
 TEL: 845.369.1234
 WWW.BERGMANN.COM

DATE: 01/15/2024
 DRAWN BY: J. BERGMANN
 CHECKED BY: J. BERGMANN
 SCALE: AS SHOWN

PRELIMINARY
 NOT FOR CONSTRUCTION

LANDSCAPING & PLANTING FOR MITIGATION PLAN

C006

CALL BEFORE YOU DIG!
 1-800-962-7962

Landscaping & Planting for Mitigation Budget Cost Estimate

February 5, 2021

Item Description	Unit	Quantity	Unit Price (2020 \$)	Cost
Tree Plantings				
AC - Abies concolor - White Fir (6-7' Height)	EA	39	\$600	\$23,400
JV - Juniperus virginiana - Eastern Red Cedar (8' Height)	EA	59	\$700	\$41,300
PG - Picea glauca - White Spruce (8' Height)	EA	38	\$700	\$26,600
PP - Picea pungens - Colorado Spruce (8' Height)	EA	43	\$650	\$27,950
TO - Thuja occidentalis 'Emerald Green' - Emerald Green Arborvitae (5' Height)	EA	33	\$450	\$14,850
			SUB-TOTAL	\$134,100
Basic Work Zone traffic Control (5%)	LS	1		\$6,705
Mobilization (4%)	LS	1		\$5,364
Survey Operations (2%)	LS	1		\$2,682
Erosion and Sediment Control (0.5%)	LS	1		\$671
			TOTAL	\$149,522
			Construction Contingency (5%)	\$7,476
			GRAND TOTAL	\$156,998
			SAY	\$160,000

Assumptions:

- Unit cost includes installation.

PLANT LIST								
Key	Qty.	Botanical Name	Common Name	Mature Size		Installed Size	Condition	Approximate Size in 5 Years
				Height	Spread			
Evergreen Trees								
AC	39	Abies concolor	White Fir	50-75' Ht.	20-30' Sprd.	6-7' Ht.	B&B	14-15' Ht. /10-12' Sprd.
JV	59	Juniperus virginiana	Eastern Red Cedar	30-60' Ht.	10-25' Sprd.	8' Ht.	B&B	15-16' Ht. /8-9' Sprd.
PG	38	Picea glauca	White Spruce	40-60' Ht.	10-20' Sprd.	8' Ht.	B&B	15-16' Ht. /8-9' Sprd.
PP	43	Picea pungens	Colorado Spruce	30-60' Ht.	10-20' Sprd.	7-8' Ht.	B&B	14-15' Ht. /10-12' Sprd.
Evergreen Shrubs								
TO	33	Thuja occidentalis 'Emerald Green'	Emerald Green Arborvitae	7-15 Ht.	3-4' Sprd.	5' Ht.	B&B	7-8' Ht. /2-3' Sprd.
1. Average growth rates were based on information from the Arbor Day Foundation.								
2. Size in 5 years represented on this table are approximate and do not take into account exact site conditions the trees will be planted in.								
3. Individual trees grow at different rates depending on their condition at installation and watering/maintenance during the period of establishment. Growth rates will vary.								



United States Environmental Protection Agency

Greenhouse Gas Equivalencies Calculator

1.87 MW AC Solar Project



3,132,000 kilowatt-hours of electricity

Equivalency Results [How are they calculated?](#)







The sum of the greenhouse gas emissions you entered above is of Carbon Dioxide Equivalent. This is equivalent to:

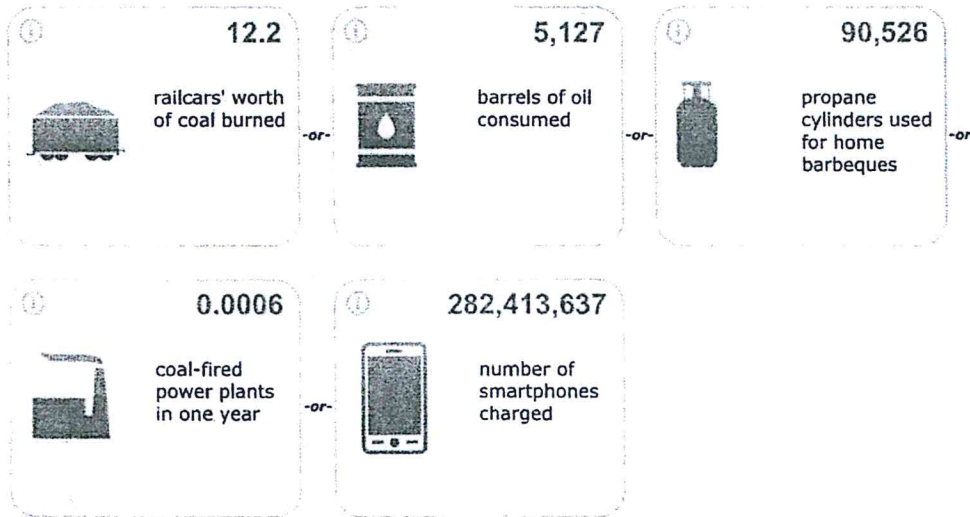
2,214 Metric Tons

Greenhouse gas emissions from

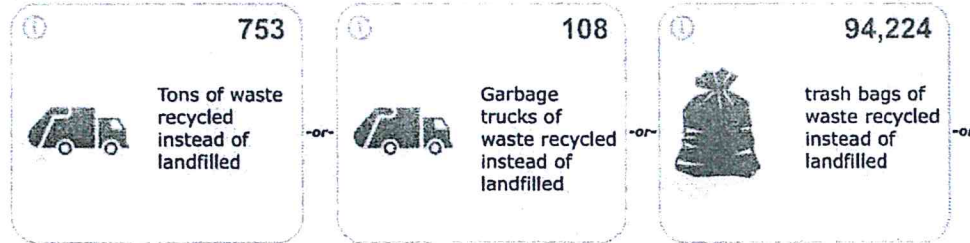
478	5,494,911
	
Passenger vehicles driven for one year	Miles driven by an average passenger vehicle

CO₂ emissions from

249,178	217,529	2,440,019
		
gallons of gasoline consumed	gallons of diesel consumed	Pounds of coal burned
-or-		
29.3	256	375
		
tanker trucks' worth of gasoline	homes' energy use for one year	homes' electricity use for one year

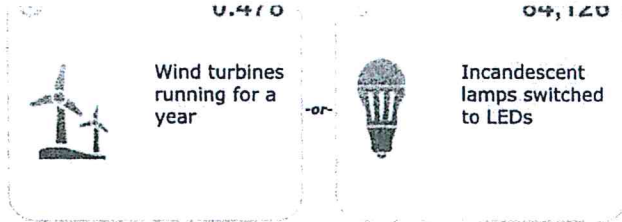


Greenhouse gas emissions avoided by



11/25/2020

Greenhouse Gas Equivalencies Calculator | US EPA



Carbon sequestered by



Solar Payment-In-Lieu-Of-Taxes (PILOT)

Assisting New York State municipalities considering payment-in-lieu-of taxes (PILOT) agreements for community solar projects larger than one megawatt.



NEW YORK
STATE OF
OPPORTUNITY.

NYSERDA

Solar Guidebook for Local Governments
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Overview

The following toolkit is for local governments in New York State who are considering a payment-in-lieu-of-taxes (PILOT) agreement for solar projects larger than one megawatt (MW). We provide resources for local governments to gain more information on PILOT agreements. A few notable resources within the toolkit are the New York Model Solar Energy PILOT Law, Model Solar PILOT Agreement for a single jurisdiction, and the PILOT calculator for taxing jurisdictions, which can be accessed here and under the PILOT toolkit section below.¹⁸

1. Community Solar

In addition to residential, commercial, and municipal projects, a relatively new kind of solar project, “community solar,” has emerged as an efficient and affordable way for all New Yorkers to gain access to clean energy. Community solar projects are much larger, typically in the 2,000-kw range and allow individuals (including renters and others who cannot install a system on their own roof) to purchase individual panels or some fraction of the electricity the entire system generates. These customers receive credits for this electricity on their monthly utility bills.

A community solar project brings revenues and benefits to a community and its residents in several ways. The owner of a project site will typically lease land to the solar company in return for lease payments. Community solar customers, which may include municipalities, businesses, and residents, save money on their utility bills. Taxing jurisdictions can benefit from PILOT payments. At the same time, given the passive nature of a solar array, a solar project does not create increased demands on municipal services and infrastructure.

2. Real Property Tax Law (RPTL) § 487

As a measure to promote the installation of clean energy sources, the New York State legislature adopted a section of the RPTL § 487 that exempts the value of a solar panel system from local property taxes.¹⁹ Under the law, any increase in the property value attributable to the addition of the solar panel system is exempt from property tax. The RPTL § 487 exemption has been a cornerstone of the State’s efforts to meet its clean energy goals, providing essential economic incentives for solar. The law does, however, allow any taxing jurisdiction (town, school, etc.) to “opt-out” of the tax exemption by adopting a local law or resolution, making the added value of a solar panel system fully taxable. Alternatively, a taxing jurisdiction that does not opt-out can require a solar developer to pay an annual fee or “payment-in-lieu of taxes” as a replacement for the taxes it would have otherwise collected. Under the law, PILOT amounts cannot exceed what the tax amount would have been without the exemption. Additionally, the law does not allow jurisdictions to partially opt out of the law to generate tax revenue from large solar projects while exempting the small systems of homeowners. Opting out of RPTL § 487 makes community solar projects financially unviable and makes homeowners’ rooftop systems more expensive.

¹⁸ The terms “taxing jurisdictions” and “jurisdictions” include counties, cities, towns, villages and school districts.

¹⁹ New York State Real Property Tax Law § 487 provides a 15-year real property tax exemption for properties located in New York State with renewable energy systems, including solar electric systems. The law applies only to the value that a solar electric system adds to the overall value of the property; it does not mean that landowners with an installed renewable energy system are exempt from all property tax. Local governments have the option to opt out of RPTL § 487 and tax solar projects at the full property tax rate, but doing so can impact project economics in a way that unintentionally prohibits developers from building projects. For more information on RPTL § 487, see Understanding New York State’s Real Property Tax Law § 487 fact sheet. A local government that does not opt out of RPTL § 487 can still generate revenue through PILOT agreements.

NYSERDA understands that many communities have little or no experience with solar PILOT agreements or with assessing the value of large-scale solar projects. Information is difficult to obtain by consulting other communities because few communities have completed large-scale solar projects.

Two common questions have arisen from New York State municipal officials and other interested parties:

- (1) If we do not opt-out and seek a PILOT, what is a fair PILOT amount based on what projects can afford?
- (2) What are the steps to negotiate a successful PILOT agreement?

The answer to the first question is complicated, as PILOTs are often negotiated for individual projects, and the PILOT amount a project can afford depends on many factors, including construction and maintenance costs, and the amount of revenue from electricity sales. From the point of view of solar developers, if the PILOT amount is too high, they will not be able to make the project economically feasible and will not proceed. So, the amount of revenue available for a PILOT is dependent on the overall project economics. The first question then becomes, "What PILOT amount will allow the jurisdiction and its residents to enjoy the benefits of the project, but will not make the project financially unviable and unattractive to a developer?"

NYSERDA's research indicates that PILOT rates should be negotiable between 1% and 3% of the compensation solar developers receive for the electricity their projects generate.²⁰ This research includes an independent analysis of current solar market data and an analysis of solar project compensation rates established under the preliminary value stack in the New York Public Service Commission's March 2017 Value of Distributed Energy Resources (VDER) order. The new solar energy compensation methodology will likely reduce project revenue. NYSERDA will review and update its PILOT guidance regularly; taxing jurisdictions are encouraged to adjust their PILOT rates accordingly.

NYSERDA offers the Solar PILOT Toolkit as a resource to help municipalities and solar developers negotiate successful PILOT agreements. The following describes the Toolkit's contents.

3. Solar PILOT Toolkit

3.1 The Model Solar PILOT Law

The Model Solar PILOT Law, or resolution, provides a sample template for jurisdictions that wish to establish the legal authority to implement a formulaic, jurisdiction-wide PILOT agreement process with solar developers. The model law cites the appropriate laws to do so and includes blank fields for jurisdictions to fill in. The model law exempts projects smaller than 1 MW AC as the amount of PILOT revenue may not justify the cost of negotiating the PILOT.

3.2 The Model Solar PILOT Agreement

Only jurisdictions that do not opt out of RPTL § 487 may enter PILOT agreements. The Model Solar PILOT Agreement provides a draft contract that jurisdictions can sign with solar developers. The agreement can be tailored to meet a jurisdiction's specific needs and includes blank fields for the jurisdiction to fill in. Jurisdictions may negotiate PILOT rates with solar developers on a project-by-project basis or may adopt a jurisdiction-wide rate for certain types of solar panel systems, typically in the form of annual payments based on a dollar-per-MW rate.

²⁰ NYSERDA continuously assesses market data and Public Service Commission proceedings and may revise this Toolkit when appropriate.

3.3 The Solar PILOT Calculator

The Solar PILOT Calculator can be accessed [here](#).

This tool provides PILOT rate guidance for solar projects and includes two separate calculators.²¹ Calculator One should be used to set a uniform PILOT rate across an entire jurisdiction.

The following table displays sample PILOT rates generated by Calculator One for a 2-MW AC community solar project in each utility service territory. The “Low” and “High” rates represent 1% and 3% of the compensation solar developers receive for the electricity their projects generate. NYSERDA’s research of solar project economics across the State indicates that such projects should be able to afford rates within this range.

	Low (\$/MW AC)	High (\$/MW AC)
Central Hudson	\$2,600	\$7,600
Orange & Rockland	\$3,200	\$9,500
National Grid	\$1,700	\$5,100
NYSEG	\$1,700	\$5,000
Con Edison	\$3,700	\$11,100
Rochester Gas & Electric	\$1,700	\$5,000

Calculator Two should be used to set PILOT rates on a project-by-project basis. It is highly customizable, taking into account extensive project-specific data and all factors affecting solar project economics. Users may accept the default values but are encouraged to enter project-specific data. Calculator Two estimates PILOT rates based on the net present value of a project’s unlevered cash flow that achieves a specified pre-tax internal rate of return.

²¹ Each calculator’s outputs reflect the sum total of all PILOT payments, property taxes from taxing jurisdictions which have opted-out of the exemption, and special district taxes (which are not exempt under RPTL § 487).